UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,221	11/26/2003	Prakash Parayil Mathew	133277IT/YOD GEMS:0235	8494

7590 04/18/2007	EXAMINER
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ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/723,221	MATHEW ET AL.
	Examiner	**Art Unit**	
	Bruce Sampson	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-27* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-27* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 26 and 27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to not-statutory subject mater.

Regarding claim 26, the computer program must be implemented on a computer readable medium and it must contain computer executable instructions. Otherwise, the instructions cannot be executed.

Regarding claim 27, the computer program must be implemented on a computer readable medium and it must contain computer executable instructions. Otherwise, the instructions cannot be executed.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1, 2, 7, 8, 9, 10, 11, 13, 15, 20, 21, 22, 24, 25, 26 and 27 are rejected

under 35 U.S.C. 102(b) as being anticipated Boreczky et. al. (US 6636296), hereafter

referred to as Boreczky.

Regarding claims 1, 2, 7, 8, 9, 10, 11, 24 and 26, Boreczky teaches a method for

processing image data comprising: comparing image data representative of a plurality

of images paragraph [(paragraph 4 lines 3-6) if the difference between consecutive

frames is determined, then those frames are being compared.] characterizing a level of

change of the image data from one image to the next [(paragraph 4 lines 7-10) the meta

data represents the difference between consecutive frames] in the plurality of images

[(paragraph 4, line 8) video frames] ; and presenting a viewer with indicia of relative

levels of change(Paragraph 4 lines 7-10, paragraph 15 lines 9-12 and paragraph 30

lines 2-5 and Fig 7 and Fig 1 #6) of the image data for the plurality of images.

Borecsky teaches a method wherein the presented indicia include a graphical

representation of progressive change between images of the plurality of images(

Paragraph 4 lines 7-10, paragraph 15 lines 9-12 and paragraph 30 lines 2-5 and Fig 7

and Fig 1 #6), as required in claims 7 and 8.

Furthermore, Borecsky teaches a method comprising presenting the viewer with a

virtual tool for navigating through the plurality of images[(paragraph 9, lines 4-6) if done

manually or (paragraph 58 lines 3-5 and paragraph 25 line 3) if done automatically]

based upon the progressive change between the images ask required in claim 8.

Regarding claims 9, 10, 13, 15, 20, 21, 22, 25 and 27, Boreczky teaches a method for

processing image data comprising: comparing image data representative of a plurality

of images; and generating a scout navigation tool by characterizing a level of change of

the image data from one image to the next [(paragraph 4 lines 7-10) the meta data

represents the difference between consecutive frames] in the plurality of images [(line 8)

video frames], the scout navigation tool including a graphical representation of

progressive change (Paragraph 4 lines 7-10, paragraph 15 lines 9-12 and paragraph

30 lines 2-5 and Fig 7 and Fig 1 #6) between images of the plurality of images and a

virtual tool for navigating through the plurality of images [(paragraph 9, lines 4-6) if

done manually or (paragraph 58 lines 3-5 and paragraph 25 line 3) if done

automatically] which is based upon the level of change.

Note [(Boreczky, paragraph 25 lines 3-4 and paragraph 26 lines 2-3) a specific speaker

depicted in video] does represent the subject of interest at different points in time as

required in claims 2 and 15.

Boreczky teaches a method comprising receiving inputs from a viewer(paragraph 9,

lines 4-6). via the scout navigation tool[(Paragraph 4 lines 7-10, paragraph 15 lines 9-

12, and paragraph 30 lines 2-5, Fig 7) and displaying images from the plurality of

images based upon the inputs (paragraph 9, lines 4-6) as required in claim 11 and 21.

Boreczky teaches a method comprising receiving inputs from a viewer (paragraph 47

lines 5-9) via the scout navigation tool and processing images from the plurality of

images based upon the inputs (Paragraph 48 lines 1-4 and 21-28) as required in claim 13.

Boreczky teaches a method comprising displaying the scout navigation tool on a viewable screen [(Paragraph 4 lines 7-10, paragraph 15 lines 9-12, and paragraph 30 lines 2-5, Fig 7) Fig 7 is a small screen. Alternatively see (paragraph 40 lines 1-5 and Fig 15 and paragraph 48 lines 11-15 and paragraph 4 lines 7-11) as required in claim 10].

Boreczky also teaches a system for processing image data (Paragraph 4 lines 7-10, paragraph 15 lines 9-12) comprising: a memory device for storing image data (paragraph 45 lines 3-4 and paragraph 39 lines 1-4) as required for claim 20.

Boreczky teaches a method comprising a user input device for selection of images for viewing from the plurality of images via manipulation of the virtual tool [(paragraph 9, lines 4-6) if done manually or (paragraph 58 lines 3-5 and paragraph 25 line 3) if done automatically] as required in claim 22.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

        1.   Determining the scope and contents of the prior art.
        2.   Ascertaining the differences between the prior art and the claims at issue.
        3.   Resolving the level of ordinary skill in the pertinent art.
        4.   Considering objective evidence present in the application indicating
                obviousness or nonobviousness.

7.   Claims 3 and 16 are rejected under 35 U.S.C.103(a) by as being unpatentable

over Boreczky et. al. (US 6636296), hereafter referred to as Boreczky, in view of Karimi

et. al (US 6813374), hereafter referred to as Karimi.

Regarding claims 3 and 16, Boreczky teaches all of the limitations of set forth in claims

1 and 9. Boreczky fails to teach a method wherein the plurality of images represent

spatially adjacent subject matter at generally the same point in time. Karimi uses the

standard deviation of the difference of two image slices to measure the change from

one image to the next (paragraph 89, lines 1-2). Therefore, If Karimi's algorithm were

incorporated into Boreczky's algorithm, the difference between consecutive frames

(Borecsky, paragraph 4 line 8) would be the standard deviation of the difference

between adjacent pixels. The rest of the method described in the rejection of claims 1

and 9 would then be applied. The noise level of a CT scanner was measured at various

distances in Karimi's method. Therefore, someone of ordinary skill in the art at the time

of the invention would be motivated to modify the teachings of Boreczky and use a

method wherein the plurality of images represent spatially adjacent subject matter at generally the same point in time. They would be motivated to do so in order to view the variation of the noise level over distance. This is important step in assessing the quality of a CT scanner.

8.   Claim 4, 5, 17 and 18 are rejected under 35 U.S.C.103(a) by as being unpatentable over Boreczky et. al. (US 6636296), hereafter referred to as Boreczky, in view of Apicella, et. al (US 5273040), hereafter referred to as Apicella

Regarding claims 4, 5, 17 and 18, Boreczky teaches all of the limitations of set forth in claims 1 and 9. However Boreczky fails to teach a method wherein the level of change is characterized by analyzing absolute differences between adjacent images in the plurality of images. Apicella teaches a method wherein the level of change is characterized by analyzing absolute differences between adjacent images in the plurality of images [(paragraph 5 lines 16-17). Note the threshold would be set to zero]. Note the absolute differences are analyzed on a pixel-by-pixel basis [(paragraph 5 lines 16-17). A voxel is a pixel], as required in claims 5 and 18. Therefore, it would have been obvious at the time of the invention to have level of change is characterized by analyzing absolute differences between adjacent images in the plurality of images and to have the absolute differences are analyzed on a pixel-by-pixel basis. They would have been motivated to do so because this is a simple way of measuring similarity. Boreczky stated that there are many methods for measuring similarity could be used

with his algorithm(paragraph 4 lines 3-6). They would also be motivated to set the threshold to zero in order to make the algorithm simpler.

9.   Claim 19 is rejected under 35 U.S.C.103(a) by as being unpatentable over Boreczky et. al. (US 6636296), hereafter referred to as Boreczky, in view of Apicella, et. al (US 5273040), hereafter referred to as Apicella and in further view of Hsieh et. al. hereafter referred to as Hsieh (US 6256368).

Regarding claim 19, Boreczky and Apicella teaches all of the limitations set forth in claims 9, 17 and 18. However Boreczky and Apicella fail to teach a method wherein characterizing a level of change of the image data includes characterizing change due to noise in the image data, and not including changes due to noise in the presented indicia.   Hsieh teaches a method wherein characterizing a level of change of the image data includes characterizing change due to noise in the image data, and not including changes due to noise in the presented indicia (Hsieh, Paragraph 18).   Hsieh first estimates the noise in the background image in the difference image. Then he uses the noise estimation information along with standard signal processing techniques to reduce the background noise in the images.   All of these authors are involved in displaying information that measures the difference between images [(Paragraph 12 lines 29-31) Hsieh displays a difference image information]. Therefore, it would have been obvious at the time of the invention to modify the teachings of Boreczky and Apicella and to use a method wherein characterizing a level of change of the image data includes

characterizing change due to noise in the image data, and not including changes due to

noise in the presented indicia.   They would be motivated to do so since so that they

could then use standard signal processing techniques to reduce the noise.

10.   Claim 6 is rejected under 35 U.S.C.103(a) by as being unpatentable over

Boreczky et. al. (US 6636296), hereafter referred to as Boreczky, in view of Hsieh et. al.

hereafter referred to as Hsieh (US 6256368).

Regarding claim 6, Boreczky teaches all of the limitations set forth in claim 1. However

Boreczky fails to teach a method wherein characterizing a level of change of the image

data includes characterizing change due to noise in the image data, and not including

changes due to noise in the presented indicia.   Hsieh teaches a method wherein

characterizing a level of change of the image data includes characterizing change due

to noise in the image data, and not including changes due to noise in the presented

indicia (Hsieh, Paragraph 18).   Hsieh first estimates the noise in the background image

in the difference image. Then he uses the noise estimation information along with

standard signal processing techniques to reduce the background noise in the images.

All of these authors are involved in the same field of endeavor. All of these authors are

involved in displaying information that measures the difference between images

[(Paragraph 12 lines 29-31) Hsieh displays a difference image information]. Therefore,

it would have been obvious at the time of the invention to modify the teachings of

Boreczky and to use a method wherein characterizing a level of change of the image

data includes characterizing change due to noise in the image data, and not including

changes due to noise in the presented indicia.   They would be motivated to do so,

because then they could use standard signal processing techniques to reduce the

noise.

11.   Claim 12 is rejected under 35 U.S.C.103(a) by as being unpatentable over

Boreczky et. al. (US 6636296), hereafter referred to as Boreczky, in view of the guide

"getting started with Microsoft windows 98" by Microsoft, hereafter referred to as the

Microsoft guide.

Regarding claim 12, Boreczky teaches all of the limitations set forth in claims 9 and 10.

However Boreczky fails to explicitly teach a method comprising receiving inputs from a

viewer via the scout navigation tool and storing images from the plurality of images

based upon the inputs. Windows 98 had a feature where the user could cut and paiste

images, which amounted to saving them(the Microsoft guide, p48). It would have been

obvious to one of ordinary skill at the time of the invention to modify Boreczky and

include a feature where the viewed images could be stored. They would have been

motivated to do so because sometimes the user is only interested in saving certain

images. Those images may contain an important viewgraph for example.

12.   Claims 14 and 23 are rejected under 35 U.S.C.103(a) by as being unpatentable

over Boreczky et. al. (US 6636296).

Regarding claim 14 and 23, Boreczky teaches all of the limitations set forth in claims 9,

10, 20 and 22. Notice that a slider is described (paragraph 9, lines 4-6 and fig 1 #3 and

fig 1 #31) as required in claim 23. However Boreczky fails to teach a system or method

comprising displaying the scout navigation tool adjacent to an image viewing region of

the viewable screen. Although Fig 1 #6 and Fig 1 #3 are not shown adjacent to the

viewing screen Fig 1 # 1, it would be obvious to perturb these elements so that they are

adjacent to the viewing screen. Therefore it would be obvious to one of ordinary skill at

the time of the invention to have the scout navigation tool adjacent to an image viewing

region of the viewable screen. They would be motivated to do so, because the viewer

would not have to shift his eyes as far.

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

US 6823207 describes an Integrated fluoroscopic surgical navigation and imaging

workstation with command protocol.

US 6369812 discloses an Inter-active viewing system for generating virtual endoscopy

studies of medical diagnostic data with a continuous sequence of spherical panoramic

views and viewing the studies over networks.

US 6466687 discloses a Method and apparatus for analyzing CT images to determine

the presence of pulmonary tissue pathology.

Rosinko et. al. describes an Enhanced surgical tracking system.

Robert Close et. al discusses a method of improved image guidance of coronary stent deployment.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce Sampson whose telephone number is 571-270-3018. The examiner can normally be reached on Monday-Friday (1st Friday off) 7:30-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 571-272-7331 The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KENT CHANG
PRIMARY EXAMINER